

Notice of Allowability

Application No.

09/491,596

Examiner

Ashwin Mehta

Applicant(s)

PIPER, TODD ELLIOTT

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the papers filed 26 August 2003.
2. ☒ The allowed claim(s) is/are 1 and 56-85.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892) | 5 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6 <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No. <u>12102003</u> . |
| 3 <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No. _____ | 7 <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |

Claim Rejections

1. The rejection of claims 22, 30-33, and 47-49 under 35 U.S.C. 112, 2nd paragraph, is withdrawn in light of the claim amendments or cancellations.
2. The rejection of claims 9-20, 22, 28-39, 41-43, and 47-49 under 35 U.S.C. 112, 1st paragraph, is withdrawn in light of the claim amendments.
3. The rejection of claims 9, 10, 14, 17, 22, 28, 29, 32, 33, 36, 41, and 43 under 35 U.S.C. 102/103 is withdrawn, in light of the claim amendments or cancellations.

Examiner's Amendment

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Steve Callistein on December 10, 2003.

In the specification:

The paragraph at page 45, lines 2-21, under the heading **Deposits**, was replaced with the following:

Applicant has made a deposit of at least 2500 seeds of Inbred Maize Line PH54H with the American Type Culture Collection (ATCC), Manassas, VA 20110 USA, ATCC Deposit No. PTA-4259. The seeds deposited with the ATCC on May 3, 2002 were taken from the deposit

Art Unit: 1638

maintained by Pioneer Hi-Bred International, Inc., 800 Capital Square, 400 Locust Street, Des Moines, Iowa 50309-2340 since prior to the filing date of this application. Access to this deposit will be available during the pendency of the application to the Commissioner of Patents and Trademarks and persons determined by the Commissioner to be entitled thereto upon request. Upon allowance of any claims in the application, the Applicants will make the deposit available to the public pursuant to 37 C.F.R. § 1.808. This deposit of the Inbred Maize Line PH54H will be maintained in the ATCC depository, which is a public depository, for a period of 30 years, or 5 years after the most recent request, or for the [effective] enforceable life of the patent, whichever is longer, and will be replaced if it becomes nonviable during that period.

Additionally, Applicant has satisfied all the requirements of 37 C.F.R. §§1.801 - 1.809, including providing an indication of the viability of the sample. Applicant imposes no restrictions on the availability to the public of the deposited material from the ATCC; however, Applicant has no authority to waive any restrictions imposed by law on the transfer of biological material or its transportation in commerce. Applicant does not waive any infringement of his rights granted under this patent or under the Plant Variety Protection Act (7 USC 2321 et seq.). U.S. Plant Variety Protection of Inbred Maize Line PH54H has been applied for under Application No. 200000204.

In the claims:

Claims 2-8, 21-27, 40, and 52-55 have been cancelled.

The following new claims have been added:

56. A maize plant, or part thereof, produced by growing the seed of claim 1.

57. The maize plant of claim 56 wherein said plant has been detasseled.
58. A tissue culture of regenerable cells produced from the plant of claim 57.
59. Protoplasts produced from the tissue culture of claim 58.
60. The tissue culture of claim 58, wherein cells of the tissue culture are from a tissue selected from the group consisting of leaf, pollen, embryo, root, root tip, anther, silk, flower, kernel, ear, cob, husk and stalk.
61. A maize plant regenerated from the tissue culture of claim 58, said plant having all the morphological and physiological characteristics of inbred line PH54H, representative seed of said line having been deposited under ATCC Accession No. PTA-4259.
62. A method of producing an F1 hybrid maize seed, comprising crossing the plant of claim 56 with a different maize plant and harvesting the resultant F1 hybrid maize seed.
63. A method of producing a male sterile maize plant comprising transforming the maize plant of claim 56 with a nucleic acid molecule that confers male sterility.
64. A male sterile maize plant produced by the method of claim 63.

65. A method of producing an herbicide resistant maize plant comprising transforming the maize plant of claim 56 with a transgene that confers herbicide resistance.
66. An herbicide resistant maize plant produced by the method of claim 65.
67. The maize plant of claim 66, wherein the transgene confers resistance to an herbicide selected from the group consisting of imidazolinone, sulfonylurea, glyphosate, glufosinate, L-phosphinothricin, triazine and benzonitrile.
68. A method of producing an insect resistant maize plant comprising transforming the maize plant of claim 56 with a transgene that confers insect resistance.
69. An insect resistant maize plant produced by the method of claim 68.
70. The maize plant of claim 69, wherein the transgene encodes a *Bacillus thuringiensis* endotoxin.
71. A method of producing a disease resistant maize plant comprising transforming the maize plant of claim 56 with a transgene that confers disease resistance.
72. A disease resistant maize plant produced by the method of claim 71.

73. A method of producing a maize plant with decreased phytate content comprising transforming the maize plant of claim 56 with a transgene encoding phytase.
74. A maize plant with decreased phytate content produced by the method of claim 73.
75. A method of producing a maize plant with modified fatty acid metabolism or modified carbohydrate metabolism comprising transforming the maize plant of claim 56 with a transgene encoding a protein selected from the group consisting of stearyl-ACP desaturase, fructosyltransferase, levansucrase, alpha-amylase, invertase and starch branching enzyme.
76. A maize plant produced by the method of claim 75.
77. The maize plant of claim 76 wherein the transgene confers a trait selected from the group consisting of waxy starch and increased amylose starch.
78. A maize plant, or part thereof, having all the physiological and morphological characteristics of the inbred line PH54H, representative seed of said line having been deposited under ATCC Accession No. PTA-4259.
79. A method of introducing a desired trait into maize inbred line PH54H comprising:

Art Unit: 1638

(a) crossing PH54H plants grown from PH54H seed, representative seed of which has been deposited under ATCC Accession No. PTA-4259, with plants of another maize line that comprise a desired trait to produce F1 progeny plants, wherein the desired trait is selected from the group consisting of male sterility, herbicide resistance, insect resistance, disease resistance, and waxy starch;

(b) selecting F1 progeny plants that have the desired trait to produce selected F1 progeny plants;

(c) crossing the selected progeny plants with the PH54H plants to produce backcross progeny plants;

(d) selecting for backcross progeny plants that have the desired trait and physiological and morphological characteristics of maize inbred line PH54H listed in Table 1 to produce selected backcross progeny plants; and

(e) repeating steps (c) and (d) three or more times in succession to produce selected fourth or higher backcross progeny plants that comprise the desired trait and all of the physiological and morphological characteristics of maize inbred line PH54H listed in Table 1 as determined at the 5% significance level when grown in the same environmental conditions.

80. A plant produced by the method of claim 79, wherein the plant has the desired trait and all of the physiological and morphological characteristics of maize inbred line PH54H listed in Table 1 as determined at the 5% significance level when grown in the same environmental conditions.

Art Unit: 1638

81. The plant of claim 80 wherein the desired trait is herbicide resistance and the resistance is conferred to an herbicide selected from the group consisting of: imidazolinone, sulfonylurea, glyphosate, glufosinate, L-phosphinothricin, triazine and benzonitrile.

82. The plant of claim 80 wherein the desired trait is insect resistance and the insect resistance is conferred by a transgene encoding a *Bacillus thuringiensis* endotoxin.

83. The plant of claim 80 wherein the desired trait is male sterility and the trait is conferred by a cytoplasmic nucleic acid that confers male sterility.

84. A method of modifying fatty acid metabolism, phytic acid metabolism, or carbohydrate metabolism in maize inbred line PH54H comprising:

(a) crossing PH54H plants grown from PH54H seed, representative seed of which has been deposited under ATCC Accession No. PTA-4259, with plants of another maize line that comprise a nucleic acid molecule encoding an enzyme selected from the group consisting of phytase, stearyl-ACP desaturase, fructosyltransferase, levansucrase, alpha-amylase, invertase and starch branching enzyme;

(b) selecting F1 progeny plants that have said nucleic acid molecule to produce selected F1 progeny plants;

(c) crossing the selected progeny plants with the PH54H plants to produce backcross progeny plants;

Art Unit: 1638

(d) selecting for backcross progeny plants that have said nucleic acid molecule and physiological and morphological characteristics of maize inbred line PH54H listed in Table 1 to produce selected backcross progeny plants; and

(e) repeating steps (c) and (d) three or more times in succession to produce selected fourth or higher backcross progeny plants that comprise said nucleic acid molecule and have all of the physiological and morphological characteristics of maize inbred line PH54H listed in Table 1 as determined at the 5% significance level when grown in the same environmental conditions.

85. A plant produced by the method of claim 84, wherein the plant comprises the nucleic acid molecule and has all of the physiological and morphological characteristics of maize inbred line PH54H listed in Table 1 as determined at the 5% significance level when grown in the same environmental conditions.

5. The following is an examiner's statement of reasons for allowance: .

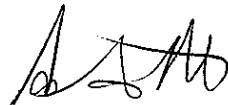
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 1638

Contact Information

Any inquiry concerning this or earlier communications from the examiner should be directed to Ashwin Mehta, whose telephone number is 703-306-4540. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays from 8:00 A.M to 5:30 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached at 703-306-3218. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 and 703-872-9306 for regular communications and 703-872-9307 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

December 10, 2003



Ashwin D. Mehta, Ph.D.
Primary Examiner
Art Unit 1638